Abstract:
A payment scheme specifies when payments are made between firms in a supply chain. It connects the physical inventory process with the cash flow process, which is a key process to understand for firm financial planning and cash management. There is a wide variety of payment schemes in practice, and the variety is increasing due to automatic electronic payments, the Internet, and information technology platforms. Unfortunately, however, standard inventory decision models make strict assumptions regarding the payment scheme. Thus, they cannot accurately relate supply chain inventory to key financial metrics for firms and can lead to biased inventory policy recommendations. This paper introduces a general model of payment schemes and two new accounting measures - financed inventory and margin backorders -- for a serial supply chain. We show how to use this modeling framework to tract the financial flow in the supply chain and evaluate key financial metrics under any given inventory policy and payment scheme, by leverage the existing inventory theory. We also revise several well-known inventory formulas to accommodate different payment schemes. Finally, we apply the framework to study joint inventory and cash management decisions and supply chain coordination issues. (This is a joint work with Jordan Tong of University of Wisconsin-Madison.)

Biography:
Jing-Sheng (Jeannette) Song is a Professor of Operations Management at the Fuqua School of Business, Duke University.

Professor Song’s expertise is in operations and supply chain management. She studies topics such as supply chain coordination mechanisms, global sourcing strategies, inventory and logistics system design and planning, e-commerce channel design, product variety and order fulfillment, supplier management, and supply chain sustainability. She has published numerous articles in leading international academic journals such as Management Science, Manufacturing & Service Operations Management (M&SOM), and Operations Research. She also co-edited the book, Supply Chain Structures: Coordination, Information and Optimization. She is the recipient of several research grants from the U.S. National Science Foundation and National Natural Science Foundation of China. In 2003, she was awarded Distinguished Overseas Young Scholar by the National Natural Science Foundation of China. In 2009, she was named a Chang Jiang Scholar Chaired Professor by the Ministry of Education in China.

Professor Song has served on the editorial boards of several leading academic journals, including an Area Editor for Operations Research in the Manufacturing, Service and Supply Chain Operations area and a Department Editor for IIE Transactions, as well as associate editors for Management Science, M&SOM, and Naval Research Logistics. She was also a past president of the Manufacturing and Service Operations Management Society of INFORMS.

Professor Song received her Ph.D. from Columbia University, M.Sc. from the Chinese Academy of Sciences and B.A. from Beijing Normal University. Prior to joining Duke University, she served on the faculties of Columbia University and University California at Irvine, and held a visiting position at the University of California, Berkeley. In the past decade or so, she has also been actively involved in advising Chinese companies and universities and held various visiting appointments in leading Chinese universities, including Tsinghua University, Shanghai Jiaotong University, Hohai University, Tongji University, and Fudan University.